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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,030	04/20/2001	Yukihito Ichikawa	791_328	9377
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EXAMINER				
LEUNG, JENNIFER A				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/830,030

Applicant(s)

ICHIKAWA ET AL.

Examiner

JENNIFER A. LEUNG

Art Unit

1797

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-32 and 34 is/are pending in the application.
- 4a) Of the above claim(s) 12-15, 19-32 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-11 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notices of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on January 23, 2009 has been carefully considered. The changes made to the Specification are acceptable. The replacement Drawing is acceptable.
2. Claims 2, 3, 33, 35 and 36 are cancelled. Claims 12-15, 19-32 and 34 are withdrawn. Claims 1, 4-11 and 16-18 are under consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 4, 6-10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580).

Regarding claims 1, 4 and 7, Hamada (see embodiment shown in FIGs. 2(a) and 2(b); abstract; machine translation) discloses a honeycomb structure 1 having a plurality of cell passages (i.e., the four cells located at the very center of the honeycomb structure) defining a cell

passage direction which are mutually parallel in the cell passage direction; wherein,

(1) intersection portions between walls defining said cell passages have a predetermined pitch in cross-sections perpendicular to said cell passages and are located in a pattern; (2) each of said cell passages has an adjacent pair of undulating wall face portions of said walls excluding said intersection portions (i.e., defined by wavy walls 4), each undulating wall face portion having an undulated shape including recessions and protrusions in both the cell passage direction and the cross-sectional direction perpendicular to said cell passage direction; and (3) for each cell passage, the undulating wall face portions of the adjacent pair are positioned such that (i) corresponding protrusions of each of the adjacent undulating wall face portions face one another and corresponding recessions of each of the adjacent wall face portions face one another, or (ii) corresponding protrusions of one of the adjacent undulating wall face portions face recessions of the other; and (4) an adjacent pair of flat wall face portions (i.e., defined by the flat walls 3 that pass through the center of the honeycomb structure) is located opposite the adjacent pair of undulating wall face portions.

With respect to the newly added limitation (5), the honeycomb structure shown in FIGs. 2(a) and 2(b) has four centrally located cell passages meeting the limitations (1)-(4), instead of the “at least 56 of said cell passages” being claimed.

Hamada, however, further discloses that,

“... if several straight-line-like walls 3 are formed also in a center section for other examples as shown in drawing 2(A) and (B), and thickness of the straight-line-like wall 3 is made larger than the thickness of the wave-like wall 4 if needed, external pressure reinforcement can be made high. Furthermore, about other examples of this invention, as shown in drawing 3 (A), (B), and (C), in this honeycomb structure object 1, as for wall 3a of the direction of a Y-Y line, through tube 5 direction, and a through tube

5 and a perpendicular direction become wave-like, and, as for wall 3b of the direction of the X-X-ray, the wall 3 of a center section becomes straight line-like.” (see paragraph [0022] in machine translation).

This disclosure suggests, to one of ordinary skill in the art, that an increase in the number of flat wall face portions predictably leads to an increase in the external pressure reinforcement of the honeycomb structure. Thus, the limitation of “at least 56 of said cell passages” is not considered to confer patentability to the claim, because it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a suitable number of flat wall face portions in combination with the undulated wall face portions in the honeycomb structure of Hamada, to define a suitable number of said cell passages meeting the limitations (1)-(4), in order to achieve the desired level of external pressure reinforcement in the honeycomb structure for its intended use.

Regarding claim 6, the amplitude of the undulated wall appears to be at least 150% the thickness of the wall (see Hamada, for example, Figs. 1-2). Hamada also discloses that the amplitude may be such that the wave height is 0.5 mm or more (see section [0020]). Although an amplitude of at least 150% of the thickness of the wall is not specifically stated, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate amplitude for the undulations relative to the thickness of the walls, on the basis of suitability for the intended use thereof, because where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Regarding claim 8, the cell passages formed by said wall face portions of said walls having an undulated shape and cell passages defined by said wall face portions of said walls

having a flat shape coexist in a discontinuous manner (see FIGs. 2(a),(b)).

Regarding claim 9, the honeycomb structure has a center portion (i.e., center section) surrounded by an outer portion (i.e., periphery section), the center portion comprising cell passages defined by undulated wall face portions; the outer portion comprising cell passages defined by flat wall face portions, the thickness of the wall of the cell passages at the outer portion is greater than that of the wall of the cell passages at the center portion (see, for example, sections [0019] and [0021]; FIGs. 2(a),(b)).

Regarding claim 10, Hamada discloses that the honeycomb structure may be made from a variety of materials, including ceramics and activated carbon (see section [0032]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to select a claimed material (e.g., ceramics such as cordierite or alumina, etc., or an activated carbon such as adsorbent activated charcoal) for forming the honeycomb structure in the modified apparatus of Hamada, on the basis of suitability for the intended use thereof, because the claimed materials are conventional in the art as honeycomb making.

Regarding claim 16, discloses that the honeycomb structure has an undulated surface for increasing the surface area, and may carry a catalyst on the surface thereof for purifying exhaust gas (see section [0020]). Placing the honeycomb structure in a housing (e.g., when incorporated as a converter; see section [0044]) is inherent therein.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580) in view of Yutake et al. (GB 2,071,640) and Maus et al (WO 96/12876 corresponding to US 6,274,099).

Hamada is silent as to the honeycomb structure comprising an undulated deformation that

is greater at the outer portion than at the center portion. Yutake et al. teaches the provision of a honeycomb structure having the channels in the outer region clogged for improving the thermal insulation. Maus et al. teaches the provision of a honeycomb structure having a greater deformation at its outer region, which closes off the channels in the outer region (see column 4, lines 32-55). It would have been obvious to one having ordinary skill in the art to configure the honeycomb structure of Hamada so that the deformation at the outer region is greater than at the center region, so as to improve the thermal insulation of the structure as taught by Yutake et al. and Maus et al.

5. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580) in view of Abe et al. (US 5,459,119).

Hamada is silent as to the honeycomb structure having the claimed wall thickness and porosity. Abe et al., however, teaches a honeycomb structure having the claimed wall thickness and porosity (see column 7, lines 31-46). Furthermore, the specific wall thickness and porosity of the honeycomb structure are not considered to confer patentability to the claim, since the precise wall thickness and porosity of the honeycomb structure would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed wall thickness and porosity of the honeycomb structure cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the wall thickness and porosity of the honeycomb structure in the apparatus of Hamada to obtain a desired level of exhaust gas purification, as suggested by Abe et al, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580) in view of Sugita et al. (JP 10-059784).

Hamada is silent as to the honeycomb structure having the instantly claimed cell density. Sugita et al., however, teaches the provision of an undulated-wall honeycomb structure having a plurality of cell passages, wherein the cell density is normally 280 cpsi (see abstract). It would have been obvious to one having ordinary skill in the art to select an appropriate cell density, such as the cell density taught by Sugita et al., for the honeycomb structure of Hamada, in order to obtain the desired purification of exhaust gas, on the basis of its suitability for the intended use as a matter of obvious design choice, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Response to Arguments

7. Applicant's arguments with respect to claims 1, 4-11 and 16-18 have been considered, but they are not persuasive.

As stated in the rejection, the honeycomb structure shown in the embodiment of FIGs. 2(a) and 2(b) of Hamada has four cell passages meeting the limitations (1)-(4), instead of the "at least 56" being claimed under limitation (5).

Hamada, however, further suggests that an increase in the number of flat wall face portions will predictably lead to an increase in the external pressure reinforcement of the honeycomb structure. (see paragraph [0022] of the machine translation). Thus, the recitation of "at least 56 of said cell passages" is not considered to confer patentability to the claim, because it would have been obvious to one having ordinary skill in the art at the time the invention to provide a suitable number of flat wall face portions in combination with the undulated wall face

portions in the honeycomb structure of Hamada, to define a suitable number of said cell passages meeting the limitations (1)-(4), in order to obtain the desired level of external pressure reinforcement in the honeycomb structure for its intended use.

The use of patents as references is not limited to its specific figures or embodiments. Rather, the broader disclosure of the reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. See MPEP 2123.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Walter D. Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797